Air-deployable profiling floats

Steven Jayne, Breck Owens, & Pelle Robbins
Woods Hole Oceanographic Institution

In collaboration with Jim Dufour at MRV Systems
Airborne eXpendable BathyThermograph

- Goal is to develop replacement for AXBT
- Currently the AXBT serves the purpose of measuring ocean temperature as a function of depth from aircraft.
- One profile per probe, nominally to 400 m (or 1000 m)
- Slight depth error due to uncertainty in the fall rate.
- They require receiver equipment (VHF) on the plane and a human operator to record their data.
- They are a primary means of providing real-time thermal structure observations in hurricane regions ahead of storms.

Air-deployed profiling floats

The current version of air-deployable floats requires that the rear cargo door of the plane be opened, as was done in the ONR-sponsored C-BLAST and ITOP programs.
ALAMO

Smaller Argo-style profiling float that will fit in the AXBT launcher and can be launched by the NOAA and USAF Hurricane Hunters planes.

Advantages include: multiple profiles, more sensors (salinity & accelerometer for surface waves), no VHF receiver equipment on planes, & data goes automatically in near-real time to GTS.

- A-sized case
- Weight ~10 kg
- 100–150 profiles
- 2000-meter depth rating
- 1-2 dbar bin-averaged data
- Iridium data communication
Data considerations

• Should data from air-deployed (or other micro) profiling floats be included in the Argo GDAC?
• Mission plan upon deployment is for daily profiles to 1000 dbar but could be set to longer cycle-times after hurricane season.
• Our plan is that data will go onto the GTS in near-realtime
• Data-stream from microfloats will be compatible with file formats currently used by WHOI for submission of Iridium S2A float data to the DAC.
• Initially ALAMO floats will have temperature and pressure (along with accelerometer data at the surface)
• Later ALAMO floats will have conductivity (RBR inductive) for salinity